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# **A rum deal: the purser's measure and accounting control of materials in the Royal Navy, 1665-1832**

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## **A rum deal: the purser's measure and accounting control of materials in the Royal Navy, 1665-1832**

We draw on archival resources and maritime and accounting history literature to explore the role of Royal Navy pursers between 1665 and 1832. Through an agency theory lens, we investigate accounting-related practices pursers used to control consumable rations, including the 'Purser's [short] measure.' The records pursers were required to keep suggest that the Royal Navy was at the forefront of the development of cost and materials accounting, and in the keeping of detailed accounting records. We provide fresh insights to the purser's role and his association with the gestation of materials waste controls, standard costing, and audit and accountability processes.

**Keywords:** accounting; auditing; costing; standard; measure; purser; Royal Navy; history

### **Introduction**

Assessments of the character and capabilities of persons engaged as Royal Navy [RN] pursers before 1832 vary considerably. He [there were no female pursers] was an essential crew member with many distinctive, stereotypical personality characteristics. These include entrepreneurial cunning and a capacity to be inured to the frequent scorn directed at him. The purser is claimed to have been the 'most denounced, satirized and lampooned of all the officers in the King's ships'; an 'alchemist' who could transform rotten and mouldy food into something quite edible<sup>1</sup> and 'a dexterous cheat.'<sup>2</sup> Pursers on 'ships of the line' (warships)

have been assessed more generously: for example, to have been ‘universally accepted as a Gentleman and suitable Company for even the Commander himself.’<sup>3</sup>

In this paper we develop a broader understanding of accounting-related aspects of the role of RN pursers, and of the accounting controls that were part of the performance of their everyday duties. We use agency theory to analyse the purser’s role and how it evolved between 1665 and 1832. Our analysis period commences in 1665 because this is when Samuel Pepys (Clerk of the Acts) proposed the appointment of a central ‘Surveyor General of Victualling for HM Navy.’<sup>4</sup> It ends in 1832 because this was the date of the abolition of the RN Victualling Board [hereafter, the Board]. We bring together hitherto scattered, inchoate and sometimes incidental literature that has addressed accounting and accountability practices adopted by RN pursers. To the best of our knowledge, there has been no previous analysis, using agency theory, of the relationship between the Board and RN pursers.

The Admiralty created the Board in 1683 to replace a victualling system based on private contracts with one that gave it greater direct control. Thereby, there was thought to be enhanced prospect of improving efficiency and quality control.<sup>5</sup> The Board supplied food, drink and other provisions for naval ships, mostly through its victualling yards in RN dockyards, to individual pursers. The Board was the second subordinate board established by the Admiralty – the Navy Board (responsible for dockyards, naval stores, shipbuilding and repairs) had been established in the sixteenth century.<sup>6</sup> The Board was one of the largest enterprises in Britain, and it had operations throughout the world.

In 1801 the Board was ‘responsible for feeding 400,000 sailors, soldiers and miscellaneous personnel spread across the world, and was required to do so cheaply, efficiently and honestly.’<sup>7</sup> At the height of the Napoleonic Wars, expenditure by the Board represented one eighth of all government spending.<sup>8</sup> The Board’s success in ‘deliver[ing] commercial effectiveness and efficiency’<sup>9</sup> to the RN is partly attributable to its exploitation of

agency arrangements involving pursers. Such agency arrangements helped to dilute rigid hierarchical organizational structures in the RN, and allowed the Board to improve administrative effectiveness and resource usage.<sup>10</sup>

We review primary and secondary literature relating to RN pursers, together with related aspects of accounting in the RN between 1665 and 1832. The literature we draw upon was identified using keyword searches on *Google Scholar* and catalogue searches at the RN Dockyard library, Portsmouth, UK. We highlight the broader historical context of the RN's development of accounting practices for materials wastage, standard costing, and inventory control. The 'purser's measure' (the practice of only issuing sailors seven eighths of the rations supplied by the Board)<sup>11</sup> was implicated in nascent forms of standard costing and accounting control of materials waste before the onset of the British Industrial Revolution [hereafter, simply the Industrial Revolution] — commonly dated from about 1760.<sup>12</sup>

In the next section, we outline our analytical framework, in two parts. First, to help form conclusions about the significance of the accounting control practices of pursers, we briefly overview literature pertaining to the history of accounting for materials, especially in Britain. In the second (and more substantive part), we outline relevant elements of agency theory. Throughout this paper, we draw upon agency theory to explain the role and purpose of pursers, and the relationship between pursers and the Board. We discuss the purser's appointment and duties, his financial emoluments and incentives, and the accounts he was required to keep. We also introduce discussion of the naval mutinies at Spithead and Nore in 1797 which resulted in abolition of the pursers' measure. We elaborate on pursers' incentives, the instrumental role of the 'purser's pound' in control of stores and provisions, and the accounting procedures to which pursers were subject. We draw on agency theory to explain the actions of pursers and the Board. We then draw conclusions and offer suggestions for further research.

## **Analytical framework**

### *Accounting control for materials: An overview*

Accounting-related controls of materials, and for materials waste, were used in Latin European countries from the turn of the sixteenth century: for example, allowances for raw materials waste were used at the Venice Arsenal.<sup>13</sup> Similar accounting techniques were used too at the Royal Textile Mill of Guadalajara (1717-44) in response to problems arising from poor quality raw materials. This prompted that mill's senior management to introduce controls through 'pre-established standards' to 'control the consumption of raw material.'<sup>14</sup> In 1737, the Royal Textile Mill 'enforced stricter control of materials handling ... ranging from storage to the avoidance of unnecessary delays in their incorporation into the production process, to accounting, to weighing.'<sup>15</sup> In the Silk Factory Company of Portugal, 1745-1747, there was a weight allowance of approximately 6% (10 ounces) in the calculation of the estimated average cost of a job 'for losses due to spoilage and shrinkage', together with evidence of the 'elements of a rudimentary standard raw material costing system'.<sup>16</sup>

Accounting history literature suggests that accounting techniques for materials, and standard cost systems, arose in the UK much later. In the UK, in contrast to the European experience, although there was an awareness of cost accounting in a variety of records prior to the Industrial Revolution<sup>17</sup>, application of practical techniques for reducing waste through 'norm-based standard costs ... [did not occur until] the late nineteenth century.'<sup>18</sup> During the Industrial Revolution 'control of waste was very much a concern for entrepreneurs of the time, particularly in the dominant iron and textile industries.'<sup>19</sup> Inventory control 'was practised by a substantial majority of Industrial Revolution enterprises ... [with inventory]... typically maintained at standard cost'.<sup>20</sup>

### *The lens of agency theory*

Agency theory is an appropriate lens through which to analyse complex contractual relationships. It is relevant in settings where ownership and control are separate.<sup>21</sup> The flexible nature of agency theory renders it suitable for extension to diverse contexts beyond traditional scenarios where the fundamentals of self-interest, information asymmetry and agency cost control can be applied more widely.<sup>22</sup>

An agency relationship arises where one group (principals) delegate control to another group (agents). Agency theory assumes that both groups are motivated by self-interest. This leads to an inherent conflict of interest. Agency costs arise when an agent's goals diverge from those of a principal. This is particularly the case where the agent has more information than the principal – a condition known as 'information asymmetry'. Agency costs involve the cost of measuring and evaluating the manager's performance, the cost of compensating managers in a way that correlates with the owner's interests, and the cost of devising and enforcing specific behavioural rules or policies. Costs are reduced when the interests of the two parties are congruent, or when the principal has knowledge of the agent's actions. Agency theory highlights the incentive for a principal to expend resources to ensure agents act in the best interests of the principal. Such incentive creates the need for governance mechanisms.

We draw from each of three streams of agency theory.<sup>23</sup> From the 'most popular stream' we focus on 'incentive alignment [and] compensation policies'.<sup>24</sup> From the second stream, of 'corporate governance and control,' we give particular attention to 'bonding mechanisms'.<sup>25</sup> From the third stream of 'agency problems, agency costs, efficacy and trade-offs of different control mechanisms,' we focus on the 'purser's pound' as a control mechanism.<sup>26</sup> Below, we highlight several important elements of agency theory that we use to explain the role and activities of RN pursers.<sup>27</sup>

An important aspect of agency theory is the information asymmetry between the agent (for example, RN purser) and the principal (for example, the Board).<sup>28</sup> One of the consequences of information asymmetry is ‘moral hazard’: where agents take advantage of the lack of observability of their behaviour by a principal.<sup>29</sup> Another consequence is ‘adverse selection.’ This occurs where one party to an exchange has information about themselves that the other party cannot obtain without incurring a cost: for example a prospective agent’s ability to satisfy a principal’s demands. Contracts with agents (here, RN pursers) have two foci: a system to monitor the agent’s actions; and a reward structure to align the agents’ interests with those of the principal.<sup>30</sup>

Agency theory has been criticised for being excessively narrow, and for generating few testable implications.<sup>31</sup> It has been assailed for promoting an under-socialised view of principals and agents by assuming they are driven entirely by self-interest, regardless of social context.<sup>32</sup> In applying agency theory, we should not underestimate an agent’s propensity to behave opportunistically, and a principal’s capacity for rationality.<sup>33</sup>

The assumption of a dyadic relationship between individuals is likely to be an oversimplistic description of reality.<sup>34</sup> Actors can be principals and agents at the same time. For example, although the Board was a major principal in respect to pursers who acted as its agents in the distribution of provisions, the Board itself was an agent of the Admiralty. In turn, the Admiralty was an agent of the government. There was a danger that the Board would shirk, engage in corruption, or monitor the wrong things. Therefore the Board required monitoring too.

Remoteness of relationships and unreliable systems of communication can influence the propensity for ultimate principals to invest in reducing agency costs. Principals are likely to conclude they will not feel the consequences of opportunistic or incompetent agents. Another complication is that an agent might have to serve two principals. For example, although a



purser received provisions from the Board, the captain of his vessel is another principal to be served. Many of the certificates and receipts submitted with accounts to the Board had to be counter-signed by the captain first: he was in a position to exert power over the purser. Additionally, because the purser's slop accounts were examined and passed by the Navy Board, they had to be kept separately from victualling accounts, thus creating another principal-agent relationship. Despite these complications, agency theory provides an insightful and instructive framework for viewing the relationship between the Board and RN pursers.

### **The purser's agency**

Pursers were first assigned to 'the King's ships' in the fourteenth century.<sup>35</sup> They 'acted as paymaster of the crew ... had charge of [non-military] stores and provisions<sup>36</sup> ... [kept] account of receipts and payments for the ship and crew, and [took] charge of slops [sailors' sea clothing] and provisions for issue.'<sup>37</sup> The slops included 'jackets, waistcoats, drawers, shirts, frocks, trousers, stockings, hats, shoes and blankets.'<sup>38</sup> There was a classic principal/agent relationship. The purser's duties of paying the crew and accounting for stores and provisions were carried out in the interests of one or both of two major absent principals, the Board and the Navy Board (for slops). The actions of pursers were difficult to monitor closely on a day-to-day basis because ships were often at sea, often away from British shores, or were otherwise unobservable.

During the latter half of the seventeenth century, Pepys was a prominent promoter of the well-being of naval personnel and the need for efficiency in the navy. He estimated that funds available for the navy in 1665-66 were no more than half of probable requirements. The consequences of this shortfall included unpaid wages and delays in victualling the fleet.<sup>39</sup> In 1683, state control of the provisioning of RN ships was strengthened when vessels were

purchased specifically to supply RN ships at sea. This prompted Pepys, in 1686, to introduce an investment plan of £400,000 per annum to restore funding levels and attain logistical efficiency.<sup>40</sup>

The mobilization of the fleet against William of Orange in 1688 provided an early test of Pepys' new arrangements for the supply of the fleet. A late demand to provide three month's provisions for an additional 35 ships put pressure on victuallers. It became apparent that the major issue was not merely that of purchase and supply, but of measurement and control. There were discrepancies in estimates between victuallers and pursers regarding the quantities supplied, and the quantities actually consumed. In correspondence with Lord Dartmouth<sup>41</sup>, Pepys remarked that 'the service may meet with disappointment ...if the commissioners here goe by one reckoning and the men eat by another.'<sup>42</sup> The solution proposed by Pepys was a more precise standard of bookkeeping and measurement, and better regulated disposal of the victuals themselves. Through personal management, forethought and energy, Pepys' proposals heralded a more formal state control of pursers.<sup>43</sup> The 1730 'Regulations and Instructions Relating to His Majesty's Service at Sea', included instruction on victualling.<sup>44</sup>

#### *Pursers' appointment and duties*

A purser had to be a man of some substance and/or be well-connected. In 1813, he had to produce three certificates of competence and find two persons who would provide acceptable sureties.<sup>45</sup> Each purser was required 'to lodge a bond'<sup>46</sup> which was used as a lever to ensure that the purser, upon his return from a voyage, submitted the necessary accounts, returns and vouchers.<sup>47</sup> The amount of bond varied according to the size of the purser's assigned ship.<sup>48</sup> For example, in 1807 a bond of £1200 was needed for a first rate ship and £600 for a sixth rate ship.<sup>49</sup> The bond was applied for the full period during which the purser was assigned to

a ship. The bond requirement was reduced,<sup>50</sup> and then removed, in 1852. If a purser was in debt at the end of his service, those guaranteeing the purser's bond would be liable to pay the amount due upon a balancing of relevant accounts.<sup>51</sup>

In addition to finding a financially-endowed guarantor, the purser was required to obtain credit on favourable terms to begin his assigned duties.<sup>52</sup> Thus, his moral obligation to bond guarantors was an inducement to align his interests (as agent) with those of the Board (as the most important principal). Such obligations also helped to control for adverse selection of pursers.

The purser's prime duty was to ensure his ship was provisioned adequately. The type and amount of provisions was fixed in standard physical allowances for the ship's class and the number of months for which storage was required.<sup>53</sup> The first victualling contract which set daily rations for each man was drawn up by Pepys in 1677, based on the traditional diet of salt meat, 'pease' and biscuit.<sup>54</sup> The standard rations, which were amended in 1731 (for example: pork and oatmeal were included for the first time), remained fundamentally unchanged until 1824.

The rationing practices adopted were a rudimentary form of direct materials standards allowance,<sup>55</sup> of the type found in more sophisticated versions of standard costing that were implemented commonly in the mid 1800s in UK manufacturing companies. Permissible substitutes were also identified if a ship was abroad (for example, one gallon of beer could be replaced by one pint of wine; one pint of olive oil by one pound of butter).<sup>56</sup> On long voyages, fresh meat usually had to be replaced by salt meat: '... the shelf life of fresh beef was extended by shipping the beasts live and slaughtering them as required.'<sup>57</sup> However, most provisions were supplied through dockyards under contracts negotiated by the Board. The purser's account was charged with the value of the ship's provisions and the casks and bags to hold them.<sup>58</sup>

Pursers acted ‘as banker to the crew [and undertook to] trade in items, such as tobacco ... and ... other non-essential items such as candles and groceries ... [and to keep] a strict control of stores ... [because] he was personally liable in the event of a shortfall.’<sup>59</sup> Additionally, the purser issued slops and supplied crew with fixed amounts of other consumable stores, known as ‘necessaries’ – wood, candles, platters, cans, spoons, lanterns, lamp oil, and bedding, for which he had to account.<sup>60</sup> An enterprising purser could also earn additional income from trading on his own initiative. He could stock and sell small items (such as pepper and boot polish) to the officers and men.<sup>61</sup>

A principal/agent situation operated. The purser was acting for the Board, but the two parties had different interests. When the purser’s ship was at sea, the Board was unable to fully supervise the purser’s actions or have full knowledge of his conduct. There was information asymmetry, conducive to moral hazard. Many pursers were not well paid and had strong incentive to seek ways to use their position for personal gain.

The purser was, in effect, a ship-board shopkeeper, banker and entrepreneur. He had strong personal incentives to maximize his profit on sales of goods, and to increase his general level of income. There may have been opportunities to forge entries in his muster books, issue substitute rations on terms favourable to him, and over-consume on perquisites. A purser would also have known that if he engaged in such behaviour, he would be acting contrary to the terms of his contract.

The overriding rule for issuing provisions was to use the oldest rations first. This was an early form of ‘first in first out’ [FIFO] inventory flow. This practice was regulated by the practice of not reimbursing monies to pursers for goods unused by the required dates (unless a survey allowed otherwise).<sup>62</sup> In this way, the Board aligned incentives and compensations. This helped it to overcome the problem of information asymmetry.

Pursers were often isolated. They often aroused animosity.<sup>63</sup> Superstitious sailors who watched ‘the great albatrosses following their ships in southern latitudes, week after week ... saw in them the souls of pursers long departed, haunting their former ships in a sleepless search for savings.’<sup>64</sup> Although many pursers were merely small shopkeepers in terms of social standing,<sup>65</sup> nonetheless, in major ships, the purser’s shipboard status was much higher. After about 1750, the purser would often have been part of the officer’s mess or wardroom, along with the ships ‘quarter deck officers’ (e.g. surgeons, lieutenants). Despite such standing, pursers often slept below the water line on top of the spirit room, to deter pilfering.<sup>66</sup> The purser’s role evolved to align his interests (as agent) with the interests of the Board (as principal). Thus, by the early nineteenth century, a purser was required to have ‘served a year as a Captain’s Clerk’; he did not ‘keep watch’; and he ‘had a steward.’<sup>67</sup> In larger ships, to help the purser cope with his prescribed duties, he was assisted by a steward and a cooper (who were both paid from the purser’s own pocket). Payment of wages was added to the list of purser’s responsibilities in 1825 and his job title was extended to ‘Paymaster and Purser’.

#### *Financial emoluments and incentives*

Before 1794, it has been claimed that the purser ‘was allowed no salary beyond that which he could realise in saving, or ... [by] pilfering the seaman’s rations’.<sup>68</sup> The accuracy of this claim is dubious in view of competing claims that, in 1686, a purser on a first rate vessel received a salary of £1 and 4 shillings per month.<sup>69</sup> What is more settled regarding the pay levels of pursers is the proposition that the purser’s remuneration came ‘much more from profits on [his shipboard] store transactions than from his own wages.’<sup>70</sup> A leading authority has observed that ‘A purser’s real chance of wealth lay not in his official duties but in private business, in broking, money lending and agency ... as the rewards of pursery itself were

slender and precarious.<sup>71</sup> In 1665, Pepys wrote that ‘a purser without professed cheating is a professed loser.’<sup>72</sup> A similar view, expressed in the latter half of the seventeenth century was that ‘the recognised way that the ship’s Purser was paid ... was by the ‘savings’ he could make on cheating the sailors of their rations and slops.’<sup>73</sup>

In return for providing his ship with coals, wood, tunnery-ware, candles and lanthorns [lanterns], the purser received allowances of 14 pence per man per month while at sea;<sup>74</sup> 4 pence per tun for ‘drawage of beer’; 2 shillings per month for loading charges;<sup>75</sup> and an allowance for wasted storage containers (i.e. casks, iron hoops, bags and jars). If the Board accepted a purser’s annual accounts, a bonus related to the size of the vessel was payable: in 1807 it was £25 for a ship with a complement of 800 men. The purser received additional payments if his ship flew a flag or broad pennant, was on convoy duty, or carried top or poop lights.<sup>76</sup> He received a commission of up to 10% on sales of tobacco (and soap from 1825), based on the price charged to seamen. For his care and effort in issuing slop clothes and bedding and managing related accounts, the purser received a commission of one shilling in the pound (that is, 5%) on the revenue generated from sales. Because there was no alternative supply of slops on board, the purser had the opportunity to cheat on price and quality.<sup>77</sup> A further commission (also at one shilling in the pound) was payable on the value of dead men’s clothes and other effects sold to crew members.<sup>78</sup> Pursers were also able to earn a profit from their entrepreneurial activities – although the extent of this would depend on their abilities and the size of the ship.

Pursers were also entitled to share in monetary rewards paid to crews for capturing or sinking an enemy ship. During this period (16<sup>th</sup> to 18<sup>th</sup> century) those who worked in maritime jobs were important to the economy and to society: they made a significant contribution to economic growth.<sup>79</sup> Seamen could move relatively easily between civil and military ships. Naval pay did not increase from 1652 to 1797.<sup>80</sup> Merchant navy wages were

higher, especially in wartime when labour shortages drove wages up. Naval crews were allowed to share in 'prize money,'<sup>81</sup> although often this did not compensate for the difference, except in cases where prizes of exceptional value were taken.<sup>82</sup> The Admiralty established a Prize Court to evaluate claims and determine the division of money. During the Napoleonic Wars (1803-1815), it was customary to pass on part of the value of prizes to the crew. The wardroom Warrant Officers (including the purser) generally secured one eighth of the total value.<sup>83</sup> The sums allocated could be considerable. For example, purser Thomas Peckston was allocated prize money of £85/2s./4d. from the capture of *La Vierge du Bon Conseil* on 29 November 1812.<sup>84</sup>

Ships' provisions were issued by a [short] weight known as the 'purser's pound.'<sup>85</sup> This was 'an abuse sanctioned by custom.'<sup>86</sup> The purser's pound compensated the purser for the loss of weight of stores that arose, under his stewardship, due to spoilage, evaporation or shrinkage:

... the purser was required to issue to the men only seven eighths of that with which he had been supplied by Government. ... If all or any part of the other eighth remained when the annual survey was taken upon the stores in the purser's care, he took it on charge as a new supply, and was allowed a fixed price for it by the Government.<sup>87</sup>

In 1761, a popular manual for seamen provides the following advice to pursers regarding the purser's measure:

All you deliver by Weight or Measure you are to keep 1/8 part for waste; the Measure of 7 Pints is for a Gallon of Beer; you receive 16 ounces and issue 14 ounces of butter and cheese, you receive Winchester measure<sup>88</sup>, and issue Wine Measure; as one Wine Pint of Pease to a Piece of Pork; a Wine Gallon of Oatmeal for a sized fish.<sup>89</sup>

The 'purser's pound' was used until 1797. It provided a general allowance for loss and wastage of materials<sup>90</sup> and was a useful means for the purser to ensure he was not indebted and earned a good living. Thus, the purser was permitted to issue dry provisions using a 14

ounce pound; and to issue liquids by a purser's quart of 35 fluid ounces. These measures were 'short' by 12.5% — or almost exactly the 12% wastage officially permitted.<sup>91</sup> There was also a separate waste allowance for casks.<sup>92</sup> A former purser, Pyend, reported in 1674 that because the allowed money for 'necessaries' was insufficient to defray relevant costs,<sup>93</sup> it was customary to leave one-eighth of the victuals on shore and to receive the value from the victualler before sailing.<sup>94</sup>

By condoning the use of short measures and allowing pursers to claim any unissued stores and provisions, the Board endowed pursers with strong financial incentive to closely control the way they stored and issued rations and provisions. The 'purser's [short] measure', gave pursers (as agents) a legitimated device to help them act in congruence with the Board's objective of ensuring adequate provisioning of ships at any time. Pursers knew that if they stored provisions well, and issued them according to regulations established by their principal (the Board), they could acquire property rights to one-eighth of such materials, and some were also suspected of selling those provisions preserved or saved.<sup>95</sup>

An opportunity for corruption and over consumption of perquisites by pursers was presented by the manner in which they maintained the ship's muster book — the base recording document for issuing rations to seamen. The muster book contained details of when and where each man joined the ship; whether 'press ganged' to join or a volunteer; details of death, discharge or any other absence ashore; and details of other items issued, such as tobacco or slops. Short allowances were entered in the book, as well as times of 'petty warrant' (when the ship was in port and rations were approximately 2/3 of those allowed at sea, with fresh provisions replacing the preserved ones required for long voyages).<sup>96</sup>

Creative practices included 'pursers entering men in the sea-books some days before they were aboard the ship, and also not discharging them until some days after they had gone from the ship.'<sup>97</sup> This enabled pursers to claim extra wages and rations for an extended



period. Delaying the record of a man's death or discharge provided the opportunity to forge a 'ticket' to claim his wages.<sup>98</sup> However, the purser could not act alone in perpetrating such acts: the muster book had to be signed every second month by him,<sup>99</sup> and by the captain, the master<sup>100</sup> and the boatswain.<sup>101</sup> Such corrupt and profiteering practices would have been more likely while a ship was at sea. When in port, mustering ('monitoring' in agency theory terms) was conducted closely by the local 'Clerk of the Cheque.'<sup>102</sup> He was an officer who kept 'the muster-rolls of a dockyard and musters of the ship's companies of vessels in the port to check false entries.'<sup>103</sup> Nonetheless, some peculiar practices were condoned. For example, from 1763 until 1831, 'a purser was entitled to keep two imaginary men per hundred on his books [for his own benefit], and these were known as Widow's men.'<sup>104</sup>

By the end of the eighteenth century, the incentive to engage in corrupt and profiteering practices was diminished: the purser was employed by the Navy Board and was paid a salary 'equivalent to that of the boatswain, the gunner and the carpenter and his responsibility was not markedly greater than theirs if it was greater at all.'<sup>105</sup> Opportunities for defrauding the naval administration became rarer as accounting mechanisms became more robust and the Board became increasingly effective in reducing the need to buy provisions directly. Many pursers found to have committed fraud were dealt with severely.<sup>106</sup> Furthermore, the assumption that the portions of rations withheld from seamen could be turned into additional money for the purser is debatable too: the quality of stored provisions was usually poor so it would be hard to imagine anybody buying them.<sup>107</sup> Nonetheless, the purser's right to retain one eighth of provisions gave him a strong incentive to minimise waste and spoilage of his ship's provisions. Similarly, the State's practice of bearing only about half of the cost of 'necessaries' the purser was required to provide<sup>108</sup> was a control measure directed to 'abate' the 'seamen's extravagance in wood and candles' (and presumably other necessities).<sup>109</sup>

### *Spithead mutiny*

In 1797, a mutiny by RN sailors at Spithead (near Portsmouth), and subsequently at Nore (in the Thames Estuary), aroused fears of a wider uprising against the ruling classes — as had occurred in the [then recent] revolution in France.<sup>110</sup> Although no violent insurrection took place, the sailors' extreme strength of feeling was evident. Their major grievances related to the inadequacy of their pay and the poor conditions under which they served (such as shore leave arrangements, treatment of sailors wounded in action, arbitrary punishments).<sup>111</sup> The Spithead mutineers referred to the fact that 'their provisions were supplied by the purser's pound, and not by an honest pound.'<sup>112</sup> They requested that provisions be allocated at a weight of sixteen ounces to the pound, and that all measures be the same as those used for commercial trade. They demanded that food rations be of better quality.<sup>113</sup>

The Spithead mutiny led to the abolition of the purser's pound<sup>114</sup> and to other improvements in the conditions and pay of seamen.<sup>115</sup> Salaries were raised for all seamen, including pursers. Payment to pursers for short allowances could only be made in the presence of the captain and master, signed by the recipient and a warrant officer. The accounting requirements for a purser became more extensive and prescriptive.<sup>116</sup> They specified various actions to be taken by pursers to control any conflict of objectives. These included the provision of quarterly statements signed by the captain, and extensive use of signed certificates indicating compliance with regulations.

Gradually, further improvements were made in RN rationing. Fruit juice was introduced in 1795 (and lemon juice in 1799) to prevent scurvy — although even as late as 1825 it was still not general issue.<sup>117</sup> By 1815, water was preserved better in iron tanks<sup>118</sup> rather than wooden casks.<sup>119</sup> In 1824, the rum ration was halved after tea and cocoa were introduced, and meat was issued daily.<sup>120</sup>

## *Accounts*

The purser discharged his accountability for stores allocated to his ship by keeping detailed accounts of the daily consumption of stores by officers and men aboard.<sup>121</sup> The accounting requirements became more extensive and specific over time.<sup>122</sup> These were outlined in the 1756 edition of the 'Private Instructions for the Pursers of Ships' in the seaman's *Vade Mecum*<sup>123</sup> and in subsequent Regulations and Instructions for Pursers.<sup>124</sup> They clearly show the need to account for debtor and creditor balances.

Only two-thirds of the advance payment the purser received to acquire provisions was paid in cash. The remainder was a credit allowed to the purser's accounts. Monies made by the purser in his official duties were 'paper credits' for which he was reimbursed once his accounts had been passed. These accounts were detailed and complicated. Any shortcoming in supporting paperwork delayed approval and payment.<sup>125</sup> It was not unusual for the expenses to take a long time to be paid.<sup>126</sup>

The purser's instructions seem contradictory. He had a responsibility 'to satisfy himself that all the provisions sent on board be sweet, good and wholesome.'<sup>127</sup> Yet, he seemed to be discouraged to take this requirement too seriously as 'provisions sent for the supply of His Majesty's Ships shall not be refused on pretence of being old, and unfit for keeping.' Any goods refused had to be surveyed by the captain before being returned to suppliers.<sup>128</sup>

If the purser's signed receipts for the purchases were deemed correct, and were signed off by the captain, the purser's account was credited with a fixed price set by the Board.<sup>129</sup> The Captain also had to oversee and sign for provisions received by the ship. This was a further check on the activities of Pursers.<sup>130</sup> Where there was a difference between the cost and this fixed price, the purser could make a profit (or a loss). In some years, the market price of some items exceeded the sum usually charged to pursers for those items. To discourage

pursers from selling the provisions at such times, any purser in debt was obliged to pay the market price to the Board.<sup>131</sup>

Although a purser did not have to pay for his ship's provisions, his accounts were charged with the value of provisions at prevailing standard rates. The credit to his account was calculated by the number of authorised men on board, multiplied by the standard ration.<sup>132</sup> To be repaid for the provisions consumed on his ship, the purser had to keep a detailed victualling account. All men on board were allowed the standard ration. For example, on Sundays: one pound of biscuit, one gallon of beer, one pound of pork and half a pint of pease.<sup>133</sup> Each crew member could agree with the purser to eat part, all, or none of their ration, and receive a credit for unconsumed rations. The purser also received a credit for any provisions returned unused. However, the amount he received for returns was usually less than he was charged on issue.<sup>134</sup>

Pursers were permitted to purchase provisions from other sources (usually in foreign ports), but only when there was a 'real want.' In this event, the purser was required to produce a certificate from the Governor or Consul (where available) or from two or three eminent merchants confirming that the purchases were made at below market prices.<sup>135</sup> If the purser issued non-standard foods, such as local produce bought in foreign ports, he had to take compensation by making savings in the standard rations.<sup>136</sup> Such arrangements provided opportunities for pursers to profit, mainly by falsifying the cost or quantity purchased.<sup>137</sup> With increased use of contractor depots and depot ships in the early nineteenth century, the practice diminished.

Provisions stored on board were inspected regularly. Rules on waste were strict. Disposal of provisions was a last resort: 'If the Bread shall be discovered to be damp, [the purser] is to apply to the Captain to have it aired on the Quarter Deck or Poop.'<sup>138</sup> Losses due to enemy action had to be certified: if the Captain considered any of the provisions unfit for use he was

to procure a survey by 'proper officers, who are to make a regular Report thereon.'<sup>139</sup> The rules on alcoholic beverages were particularly strict. There was a continual problem with leaking casks, necessitating large ships to include coopers in their crew.<sup>140</sup> At the end of a voyage, a regular survey of provisions remaining was carried out, before the purser's accounts were prepared. The purser then had to swear an affidavit that the said provisions were received out of His Majesty's stores or from persons under contract.<sup>141</sup>

The purser's accounting records were extensive. They were kept in 'extraordinary detail'<sup>142</sup> and required numerous certificates and forms, and were considered very important. Even if his ship was sinking, the purser was required 'to use his utmost endeavours to preserve all his books, papers and accounts.'<sup>143</sup> Although regulations stated explicitly that the purser's diligence in keeping his accounts could affect his career prospects, many still submitted late or incomplete records.<sup>144</sup>

There were dangers for pursers in diverging from regulations, even under captain's orders. For example, the purser on the *Mermaid* in 1794, Copland, was ordered by his captain to issue extra rum while the ship was in the North Sea. The Board disallowed the expense. However, on appeal the claim was deemed reasonable, but the captain's wages were charged instead. Great care needed to be exercised too when making apparently valid claims. Copland asked for a copy of the Admiralty Order concerning top and poop lights after disallowance of his claim in respect of expenditure on these lights on a voyage of the *Alcmene* to Lisbon and Gibraltar.<sup>145</sup> The Captain was required to give written authority for any extra supplies or issues<sup>146</sup> and for substitutes to be issued (e.g., rice or flour for bread). Such written authorities needed to be included in the quarterly survey of provisions by the purser.

By 1825, within one month of the survey, the purser was required to submit comprehensive accounts to the Board (keeping a copy for himself).<sup>147</sup> Accounts were required quarterly and within 12 months of the last set of accounts lodged during the purser's

term of appointment.<sup>148</sup> The accounts were to be accompanied by the following certificate, signed by the purser.

I hereby certify that previously to transmitting the Books and Paper herewith sent, I have satisfied myself that they are made up and signed by myself, and the respective Officers of the Ship, in exact conformity to the Instructions which I have received for my guidance.<sup>149</sup>

The purser kept two sets of books: one for everyday use, and a fair copy of his victualling books. He was required to show both sets of books to the Captain, but not at the same time. Both sets of books were not to be out of his possession at any time. The purser was required to give the Captain sufficient time to examine the accounts ‘minutely.’<sup>150</sup> A certificate from the Purser on the monthly book was required to be carefully compared with the victualling books (rough and good copies).

The victualling book was to be certified by both the Purser and the Captain’s Clerk. The verifications were from the date of the last monthly muster book and would be examined with the ship’s books. The Captain’s Clerk kept a General Muster book which showed the complement of men and any changes therein.<sup>151</sup> He was required to certify all changes in the numbers of seamen (upon which the calculations were based) and these were all examined to ensure they agreed with the ships records.<sup>152</sup> An additional certificate was required on the quarterly accounts of provisions and other goods received.<sup>153</sup> The Captain’s Clerk was required to keep account of the provisions coming on board, to attend the receiving of those provisions, to examine the bill of lading, and to agree to the contents received.<sup>154</sup> There was a daily account of the men victualled and the provisions issued. As well, a certificate was drawn up of provisions issued as substitutes for those unavailable, together with a general account of provisions and stores returned, and a yearly statement of account.<sup>155</sup> The latter statement was posted to the Commissioners for Victualling at the Board where the purser’s calculations were

checked. The Statement of Accounts was based on the victualling book and the 'General Account of Provisions Received and Returned': the debtor side contained the total of each type of provision received, after allowance for all credits (e.g. returns, condemned or damaged goods). The credit side contained victualling details for each 'species', the prescribed allowance for waste, any necessary money for the ship's complement or supernumeraries, and any other claims to which the purser was entitled.

The quantities required to be added to the Debtor side of the Account will shew the Surplus of each Article to which the Purser is entitled, or his Credit. The quantities that are added to the Credit side will show his deficiency or Debt.<sup>156</sup>

There were no instructions on the consequences of credit balances. However, instructions were more forthcoming about a debit balance. If the purser's account was in debit, he had to provide a 'the most satisfactory explanation that he can afford, as to the cause of such deficiency: and when he might appear to have a credit of any species of provisions exceeding his allowance for eighths, he is to send with his statement, a similar explanation as to the cause of such extraordinary credit.'<sup>157</sup> Depending on the size of the debt and the adequacy of its explanation, some amount of this debt could be carried to his next account. Alternatively, if there was a large debt without satisfactory explanation, the purser's guarantors would be called upon immediately for payment 'and he will be considered as undeserving of employment in a Ship of a large class.'<sup>158</sup>

Slops (sailor's clothes) were issued in a similar way to victuals. Until 1758, they were received from a contractor, thereafter they came from the Navy Board.<sup>159</sup> The Purser had to keep a Muster book of entry, discharge, desertion, death, attendance and absence of every man belonging to the ship and to show against their names the slop clothes and other supplies issued to them.<sup>160</sup> The General Muster book, the Monthly Slop book and all tickets were signed by the Captain, Master, Purser and Boatswain, as was the Sick book.<sup>161</sup>

The Board's approach to its work was thorough and painstaking. The focus was on safeguarding the public purse rather than on achieving efficiency. Underresourcing of the Board resulted in a backlog of unexamined accounts – a situation which improved following the reconstitution of the Board in 1808.<sup>162</sup> Many pursers had to wait for years before their accounts were settled, and some were never settled. For example, the Board insisted on seeing original documentation before a set of accounts could be passed. However, pursers and other officers often considered it too risky to send these on another ship. It was not uncommon for duplicate documentation to be unprocessed at the Board until the originals could be produced. Similarly, the Board insisted on seeing, and finalising, both sides of a transaction before accounts were passed. Many pursers (or their executors) remained unpaid because the accounts of agent victuallers had not been finalised.<sup>163</sup> By the 1780s, the Board was 'engulfed in almost continuous scandals and divisive rows.'<sup>164</sup> Increasingly, it was unable to keep up with the accounting requirements of an increased level of business.

## **Discussion and conclusions**

The period 1665 to 1832 was a time of great economic change that encompassed the Industrial Revolution. During this time, the Board was tenacious in regulating the recording, controlling, distribution and management of materials, particularly rations. A purser was required to keep detailed accounting records, and to have these records approved by his ship's captain, and audited by the Board. Generally, the purser was a wily man who stood to gain or lose a great deal of money depending on how he managed provisions – those he purchased and those provided to him by the Board. If pursers wanted to cheat sailors of provisions, the pursers' pound was a handy implement with which to do so.

The records required of pursers suggest that the RN was at the forefront of rudimentary attempts to develop cost accounting, and accounting for materials, in the UK prior to the



Industrial Revolution. Whether there is reliable empirical support for the positioning of RN practice in this way merits closer research. The absence of literature providing an authoritative assessment of whether RN settings were the locale for the genesis of standard costing and inventory control practices used subsequently in the Industrial Revolution, can be attributed to the propensity for accounting historians to ‘look in the wrong place for their evidence [because] costing techniques initially emerg[ed] in a less robust form than the bound ledgers usually associated with the financial accounting function.’<sup>165</sup> The propensity for accounting historians to concentrate more on matters of financial accounting than cost accounting has led to ‘scant attention’ being accorded to cost accounting history in the UK (especially before 1914).<sup>166</sup> Such lack of attention has been attributed to ‘the absence of a cost accounting literature, a cost accounting curriculum, and an organized profession with developed conventions and practices.’<sup>167</sup>

This heightens the need to further explore the suggestion that the RN was at the forefront of, and provided the genesis for, important accounting practices subsequently adopted by entrepreneurs in the Industrial Revolution (many of which are now accepted universally). A promising line of enquiry would be to investigate whether early pioneers of cost accounting techniques (including standard costing and inventory control) in the Industrial Revolution had served in the RN. If so, is there evidence that they implemented or observed those techniques in practice before adopting them in their businesses?<sup>168</sup>

Agency theory helps in better understanding the purser’s role. The purser was the ‘representative [agent] of the state [represented by the principal, the Victualling Board]’ responsible for ensuring ‘economy and control ... [and] the smooth operation of each ship’s internal economy.’<sup>169</sup> The Board’s initial aim (as principal) was to minimise the cost of providing materials and to ensure sailors were sufficiently well-nourished to perform their designated duties and that standards of discipline were maintained. However, in addition, the

Board ‘had the most politically sensitive task of all government offices, for it had to intervene in the markets to procure very large amounts of food.’<sup>170</sup>

The Board was in a position of information asymmetry. It could not know, in a timely manner, what took place on ships in geographically remote locations. A ship-board purser (as agent) would have been aware of this asymmetry. He had ample scope to *not* follow regulations (e.g. to maximise his own income, at the expense of the Board or of seamen aboard his ship). Therefore, the Board had to consider the extent to which it was willing to expend resources to alter a purser’s opportunities to capture non-pecuniary benefits. The ‘purser’s measure’ was cost-neutral as far as the Board was concerned: it was equivalent to the waste allowance it permitted pursers to sustain in carrying out their role. The purser’s measure had the advantage of informally providing a legitimated source of remuneration to pursers. Thereby, it enabled their official salaries to be kept at a depressed level, presenting economies to the Board. The purser’s measure was, in effect, an institutionalised device to allow for waste and to benefit the purser (in terms of physically undistributed provisions).

In the language of standard costing, the purser’s measure allowed for an institutionalised favourable direct materials usage variance<sup>171</sup> attributable to the purser. It was an incentive to induce the purser (as agent) to act in accord with the desires of the Board (as principal). The purser could only realise this incentive if he stored the allocated rations in good order, issued them according to standard allowances, and accounted for them diligently.

The performance of a purser in his interactions with the Admiralty, via the Board (e.g., the extent to which he conformed with regulations) helped to determine whether he was re-employed or promoted to a larger ship. This was significant, since the salary of pursers was determined by the size of a ship. There were also opportunities to earn higher allowances and commissions on larger vessels. However, adverse selection was also a problem because often principals were unable to evaluate the skills of prospective agents.<sup>172</sup> This problem was

addressed partly when the first pursers with long experience of victualling arrangements were appointed to the Board during the Napoleonic Wars.<sup>173</sup> This introduction of ‘hands on’ expertise is likely to have reduced agency costs and to have enabled the Board to better meet the considerable challenges it faced.

The agent-principal relationship between pursers and the Board needs to be considered within a broader dynamic social context — one affected by other agency relationships, changing regulations, changing objectives, competition, interest groups, experience, and social norms.<sup>174</sup> Attitudes towards government shifted during the 1780s, establishing the principle that private incomes and public revenues should be separated, and that fees and gratuities should cease.<sup>175</sup> The Spithead and Nore mutinies of 1797 fundamentally changed the context within which the Board dealt with pursers. It brought existing practices for supply of ships under public scrutiny. Between 1761<sup>176</sup> and 1825<sup>177</sup> attempts were made to increase the programmability of the purser’s task, so that precise desired behaviours were defined<sup>178</sup> — particularly with respect to more prescriptive and extensive accounting requirements. A purser’s agreement therefore contained additional bonding covenants, to reduce opportunistic behaviour and control potential conflict. Over time, the Board accepted the need to shift pursers’ compensation away from contracts which rewarded them for their achievements (such as provisioning ships efficiently) and entrepreneurial acumen. The Board moved towards agreements which rewarded pursers for adopting appropriate desired behaviours. This required the Board to incur additional (agency) costs (paying higher salaries to pursers and incurring additional monitoring costs) in the interests of ameliorating public concerns. These changes reduced a purser’s freedom of action. Increasingly, his role resembled that of a subordinate official rather than an agent. The move from a system using fees, gratuities and perquisites to one based on established salaries, mirrored changes that took place in the Board itself from 1800.<sup>179</sup>

Future research could consider applying historical institutionalism<sup>180</sup> to explore how the role of pursers, and the control mechanisms they used, evolved over time. This could be carried out using the Spithead and Nore mutinies as a ‘critical juncture’ to analyse changes in underlying institutional logic, before and after, the mutinies. There is also scope for further use of agency theory to better understand the audit procedures to which pursers were subject. Additionally, further research could compare control mechanisms in the RN with those adopted by other great navies of the world (Portuguese, Spanish, French, Dutch) prior to, or during, the analysis period. Was mimetic isomorphism influential (and if so how) in constructing the principal-agent relationship which emerged in the RN?

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## Notes

<sup>1</sup> Leyland, 'The Purser', 321-2

<sup>2</sup> Neale, *Mutiny at Spithead*, 7.

<sup>3</sup> Carr Laughton, 'The Naval Repository', 148, citing an Anonymous Officer of the Navy.

<sup>4</sup> With the restoration of the monarchy in 1660, victualling was facilitated through private contract. One person, Denis Gauden, was responsible for supplying all of His Majesty's Ships. During times of war this proved an onerous task, especially as the government were slow payers, and there were problems with food shortages on many ships. Pepys was given the responsibility for devising a new victualling system in 1665. He proposed that a new post of surveyor-general be created (supported by a surveyor of victuals in each port) to ensure that

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virtualling was carried out effectively and efficiently. The proposal was approved formally by the King. Pepys nominated himself as the new surveyor-general. In 1683, following further difficulties, a state virtualling department was established - the Virtualling Board. Tanner, 'Discourses of the Navy', 155-183.

<sup>5</sup> Macdonald, *Feeding Nelson's Navy*.

<sup>6</sup> Other subordinate boards were created in 1689: the Sick and Hurt Board (responsible for naval hospitals and the health of seamen) and the Transport Board (responsible for transporting supplies around the world). The latter body was disbanded between 1724 and 1794. Knight and Wilcox, *Sustaining the Fleet*.

<sup>7</sup> Graham, 'Reviews', 981.

<sup>8</sup> Davey, 'Expertise and Naval Administration.'

<sup>9</sup> Graham, 'Reviews', 982.

<sup>10</sup> Ibid., 982-983.

<sup>11</sup> Claxton, 'Foreign Miscellany.'

<sup>12</sup> We use the terms 'purser's measure' and 'purser's pound' synonymously.

<sup>13</sup> Zan, 'Accounting and Management Discourse,' 155.

<sup>14</sup> Carmona and Gómez, 'Early Cost Management Practices,' 239, 247.

<sup>15</sup> Ibid., 239.

<sup>16</sup> Carvalho, Rodrigues and Craig, 'Early Cost Accounting Practices,' 74, 83.

<sup>17</sup> 'Significant use was made of cost accounting data for planning, decision making and control before and during the industrial revolution'. (Edwards and Newell, 'Cost and Management Accounting', 54). There is evidence of the use of standard yields in agriculture in the thirteenth century; standard costs in the smelting industry in the seventeenth century; and labour standards based on 'time and motion' studies in the eighteenth century steel industry (ibid. p. 48). The recording of costs by managers and owners for control purposes dates from before the Industrial Revolution 1760 – 1820/40 (Boyns and Edwards, 'Management Accounting in Britain'). A study of the accounting records from 1667-1751 of an Ironworks in the UK Midlands, for example, concluded that whilst a simple charge and discharge account was used, management of the business obviously understood the cost of the processes of the business by monitoring the yield from each raw material (King, 'Management Finance and Cost Control').

<sup>18</sup> Fleischman and Tyson, 'Evolution of Standard Costing', 92, 95.

<sup>19</sup> Ibid., 97.

<sup>20</sup> Ibid., 99.

<sup>21</sup> Shapiro, 'Agency Theory.'

<sup>22</sup> Wiseman, Cuevas-Rodriguez, and Gomes-Meija, 'Social Theory of Agency.'

<sup>23</sup> Shapiro, 'Agency Theory,' 269-70.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

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<sup>26</sup> Ibid.

<sup>27</sup> For a fuller appreciation of agency theory refer to the overviews by Eisenhardt ('Agency Theory: An Assessment'), Shapiro ('Agency Theory'), and Wiseman, Cuevas-Rodriguez, and Gomes-Meija ('Social Theory of Agency').

<sup>28</sup> Pratt and Zeckhauser, 'Principals and Agents.'

<sup>29</sup> Arrow, 'Control in Large Organizations.'

<sup>30</sup> Jensen, 'Ownership and Control.'

<sup>31</sup> Perrow, *Complex Organizations*.

<sup>32</sup> Lubatkin et al., 'Framing of Governance.'

<sup>33</sup> Ibid.

<sup>34</sup> Shapiro, 'Agency Theory.'

<sup>35</sup> There was no standing navy until the mid-sixteenth century. Warlow, *The Purser*.

<sup>36</sup> 'Provisions' refers to food and drink. 'Necessaries' is applied to other consumables, such as coal, firewood, hammocks, bedding, wooden plates and bowls, and candles. Morriss, *British Maritime Ascendancy*, 317.

<sup>37</sup> Leyland, 'The Purser,' 322.

<sup>38</sup> Morriss, *British Maritime Ascendancy*, 317.

<sup>39</sup> Tanner, 'Administration of the Navy.'

<sup>40</sup> Ehrman, 'Pepys's Organization.'

<sup>41</sup> This is a reference to George Legge 1st Baron of Dartmouth (1647-91). He was commander of the Channel Fleet when it was mobilised to meet the invasion threat posed by William of Orange in 1688. He took an active interest in defence preparations, and informed Pepys of his concerns. Dartmouth was a strong supporter of James II. He was imprisoned in the Tower of London following William's accession to the throne.

<sup>42</sup> Legge Dartmouth, 'Manuscripts of the Earl of Dartmouth,' 218.

<sup>43</sup> Ehrman, 'Navy in the War of William III.'

<sup>44</sup> Warlow, *The Purser*.

<sup>45</sup> MacDonald, 'Feeding Nelson's Navy'.

<sup>46</sup> Documents at the National Archives of the UK include pursers' bonds dating from 1655. (Cock and Rodger, 'Guide to the Naval Records').

<sup>47</sup> Scorgie and Reiss, 'Impact of Naval Experience,' 66.

<sup>48</sup> Claxton, 'Foreign Miscellany.'

<sup>49</sup> CEO, 1807, 'Regulations and Instructions,' 33.

<sup>50</sup> By 1825 the requirement for a First Rate appointment was reduced to £1,000 from £1,200. CEO, 'Regulations and Instructions.'

<sup>51</sup> CEO, 'Additional Instructions'.

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<sup>52</sup> Rodger, *Wooden World*.

<sup>53</sup> Ibid.

<sup>54</sup> Macdonald, 'Feeding Nelson's Navy'.

<sup>55</sup> Standard costing is a form of budgeting developed to control costs. The costs expected to be incurred in making a particular product or delivering a particular service are determined after an investigation and are then used as a point of comparison with actual costs incurred. Variances arising from differences in purchase price, and differences in quantities used can be identified separately. In this case, the direct materials standard allowance would be the budgeted cost of food and other necessities required to keep a ship of a particular size in service for a given period of time. Jones, *Accounting for Non-Accountants*.

<sup>56</sup> Mountaine, 1761, 236; Warlow, *The Purser*, 32.

<sup>57</sup> Macdonald, 'Victualling and Health,' 445.

<sup>58</sup> CEO, *Purser's Instructions*, 1795.

<sup>59</sup> Scorgie and Reiss, 'Impact of Naval Experience,' 65-66.

<sup>60</sup> Tanner, *Navy Manuscripts*, 161, 168.

<sup>61</sup> Macdonald, *Feeding Nelson's Navy*, 95.

<sup>62</sup> Macdonald, 'Victualling and Health.'

<sup>63</sup> Rodger, *Wooden World*.

<sup>64</sup> Ibid., 94.

<sup>65</sup> Brock, *John Copland*

<sup>66</sup> Ibid.

<sup>67</sup> Blake and Lawrence, *The Illustrated Companion*, 70.

<sup>68</sup> Neale, 'History of the Mutiny'.

<sup>69</sup> Tanner, *Navy Manuscripts*.

<sup>70</sup> Leyland, 'The Purser,' 322.

<sup>71</sup> Rodger, *Wooden World*, 97-98.

<sup>72</sup> Pepys' diary on 22 November 1665 quoted in Tanner, 'Administration in the Navy', 80.

<sup>73</sup> Warlow, *The Purser*, 19.

<sup>74</sup> The commission for providing these items was ½ pence per man per day. Brock, *John Copland*.

<sup>75</sup> Mountaine, 1761.

<sup>76</sup> This indicated that the ship was commanded by a senior officer from Portsmouth or Plymouth. Brock, *John Copland*.

<sup>77</sup> Brock, *John Copland*.

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<sup>78</sup> CEO, 1807, 'Regulations and Instructions', 81.

<sup>79</sup> Unger, *Trades, Ports and Ships*.

<sup>80</sup> Rodger 'Command of the Ocean'

<sup>81</sup> Fusaro, *The Invasion of Northern Litigants*.

<sup>82</sup> Rodger 'Command of the Ocean'

<sup>83</sup> Upton, *Law of Nations*.

<sup>84</sup> Royal Naval Museum, *Thomas Peckston*, .

<sup>85</sup> Rodger, *Wooden World*.

<sup>86</sup> Brock, *John Copland*, 25.

<sup>87</sup> Anonymous Midshipman of the Last Century, 'Recollections,' 43.

<sup>88</sup> This measure of dry capacity (i.e. bushel) was derived from the standard established in Winchester during the reign of Edgar 959-975 AD. It was replaced by Imperial measures in 1824.

<sup>89</sup> Mountaine, 1761, 237.

<sup>90</sup> Claxton, 'Foreign Miscellany.'

<sup>91</sup> Many derogatory nicknames for the purser were derived from his use of short measures, including 'Mr. Nipcheese.' Blake and Lawrence, *Illustrated Companion*, 101; Brock, *John Copland*.

<sup>92</sup> 'The king allows one tun of cask waste for a 100 men per month; 2 iron-hoops, and 3 biscuit bags. You must take the total of your Victualling, and divide by 28, and cast off the last two figures towards the right hand'. Mountaine, 1761, 236.

<sup>93</sup> Tanner, *Navy Manuscripts*.

<sup>94</sup> Pyend, cited by Tanner, *Navy Manuscripts* also Navy Records Society, *Publications*

<sup>95</sup> Morris, *Foundations of British Maritime Ascendancy*, 319

<sup>96</sup> Mountaine, 1761, 74.

<sup>97</sup> Pyend, cited by Tanner, *Navy Manuscripts*, 162.

<sup>98</sup> Brock, *John Copland*.

<sup>99</sup> Other dubious practices were common. Short allowance money was supposed to be paid to the men directly, to compensate them for any scarcity of provisions, but sometimes this money was paid elsewhere. Slops were bought from a contractor.

<sup>100</sup> The master was a warrant officer responsible for navigation, fitting out the ship, and ensuring there were sufficient sailing supplies aboard.

<sup>101</sup> The boatswain was a warrant officer responsible for rigging, cables, anchors and boats.

<sup>102</sup> Brock, *John Copland*.

<sup>103</sup> Young and Brisbane, *Nautical Dictionary* , 89.

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<sup>104</sup> Exeter Flotilla, *Purser's Slops*, n.p..

<sup>105</sup> Brock, *John Copland*, 23.

<sup>106</sup> *The Times* of 29 June 1802 reported that 'Mr. Cocks, Purser in the Navy, stood in the pillory yesterday opposite the Admiralty, for defrauding His Majesty of Naval Stores.'

<sup>107</sup> Brock, *John Copland*.

<sup>108</sup> Tanner 1896, *Discourse of the Navy*, 175; Tanner, *Navy Manuscripts*, 163.

<sup>109</sup> Tanner, *Navy Manuscripts*, 161.

<sup>110</sup> Mackie, *Year of Mutinies*.

<sup>111</sup> Rodger 'Command of the Ocean' 446.

<sup>112</sup> Mackie, *Year of Mutinies*.

<sup>113</sup> Orth, 'Voices from the Lower Deck.'

<sup>114</sup> To compensate pursers for wastage losses, a credit of one ninth of the total amount issued was added when the purser's accounts were completed and passed. Macdonald, *British Navy's Victualling Board*, 104.

<sup>115</sup> Gill, *Naval Mutinies of 1797*.

<sup>116</sup> CEO, 'Regulations and Instructions'; CEO, 'Instructions for Pursers.'

<sup>117</sup> Macdonald, 'Victualling and Health.'

<sup>118</sup> Macdonald and Jones, 'Iron Water Tanks.'

<sup>119</sup> Morriss, 'Supply of Casks.'

<sup>120</sup> CEO, 'Instructions for Pursers', 1825.

<sup>121</sup> CEO, 'Additional Instructions'; Claxton, 'Foreign Miscellany.'

<sup>122</sup> The thirteenth edition of the *Regulations* published in 1790 consisted of 232 pages, but by 1806 when the fourteenth edition was published, it had grown to 440 pages. Macdonald, *Feeding Nelson's Navy*.

<sup>123</sup> Mountaine, 1690, 188.

<sup>124</sup> CEO, 'Regulations and Instructions'; CEO, 'Additional Instructions'; CEO, 'Instructions for Pursers.'

<sup>125</sup> Rodger, *Wooden World*.

<sup>126</sup> The number of purser's accounts to be considered by the Board increased during periods of war. Following Admiralty agreement to pay staff overtime to clear the backlog arising from the French Revolutionary War, it was reported in November 1805 that the backlog of purser's accounts had been reduced from eighteen to eight months. There is also evidence that the Board did not consider its accounting role to be a priority. Macdonald, *British Navy*, 86-89.

<sup>127</sup> CEO, 'Instructions for Pursers.'

<sup>128</sup> Ibid.

<sup>129</sup> CEO, 'Additional Instructions.'

<sup>130</sup> CEO, 'Pursers Instructions' 1759, 4.

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<sup>131</sup> Mountaine, 1761.

<sup>132</sup> CEO, 'Additional Instructions.'

<sup>133</sup> Mountaine, 1761, 71.

<sup>134</sup> Rodger, *Wooden World*.

<sup>135</sup> Mountaine, 1761.

<sup>136</sup> Rodger, *Wooden World*.

<sup>137</sup> Although transactions needed to be supported by vouchers from suppliers and to be countersigned by another ships' officer, this required either collusion or alteration of the vouchers after they had been signed. Macdonald, *British Navy's Victualling Board*.

<sup>138</sup> CEO, 'Instructions for Pursers,' 19.

<sup>139</sup> Mountaine, 1761.

<sup>140</sup> Macdonald, 'Victualling and Health.'

<sup>141</sup> Mountaine, 1761, 62.

<sup>142</sup> Morriss, *British Maritime Ascendancy*, 317.

<sup>143</sup> CEO, 1825, 'Regulations and Instructions', 49.

<sup>144</sup> Macdonald, *British Navy's Victualling Board*.

<sup>145</sup> Brock, *John Copland*.

<sup>146</sup> CEO, 'Additional Instructions.'

<sup>147</sup> CEO, 'Instructions for Pursers.'

<sup>148</sup> CEO, 'Additional Instructions.'

<sup>149</sup> CEO, 'Instructions for Pursers,' 127.

<sup>150</sup> CEO, 'Additional Instructions.'

<sup>151</sup> Mountaine, 1756, 192-5.

<sup>152</sup> CEO, 'Pursers Instructions' No VIII.

<sup>153</sup> CEO, 'Pursers Instructions' No X.

<sup>154</sup> Mountaine, 1756, 197

<sup>155</sup> CEO, 'Pursers Instructions'

<sup>156</sup> CEO, 'Instructions for Pursers,' 45.

<sup>157</sup> Ibid., 46.

<sup>158</sup> Ibid.

<sup>159</sup> Rodger, *Wooden World*.



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<sup>160</sup> CEO, 'Pursers Instructions,' No XXX.

<sup>161</sup> Mountaine, 1756. 197.

<sup>162</sup> Knight and Wilcox, *Sustaining the Fleet*, 25.

<sup>163</sup> Macdonald, *Feeding Nelson's Navy*, 74.

<sup>164</sup> Knight, 'Trust in Victualling,' 133.

<sup>165</sup> Boyns and Edwards, 'Construction of Cost Accounting Systems,' 4.

<sup>166</sup> Fleischman and Tyson, 'Evolution of Standard Costing', 95.

<sup>167</sup> Ibid.

<sup>169</sup> Morriss, *British Maritime Ascendancy*, 319.

<sup>170</sup> Knight and Wilcox, *Sustaining the Fleet*, 26, 67, provide an example of a Board messenger who accepted a Christmas gift box from a contractor in December 1812 and was accused by the Board of 'gross impropriety of conduct.' Twenty years earlier this would probably have been ignored.

<sup>171</sup> See endnote 55 for an explanation of standard costing. If the normal practice was to withhold one eighth of the allowed 'materials', then it would be expected that in most cases material usage would be under budget or have a favourable variance.

<sup>172</sup> Shapiro, 'Agency Theory.'

<sup>173</sup> Two such pursers who served as Commissioners of the Board were John Aubin (1808 to 1822) and Nicholas Brown (1808 to 1830). Macdonald, *British Navy's Victualling Board*, 227 – 228.

<sup>174</sup> Mitnick, 'Agency and Organizational Analysis.'

<sup>175</sup> Knight and Wilcox, *Sustaining the Fleet*.

<sup>176</sup> Mountaine, 1761.

<sup>177</sup> CEO, 'Instructions for Pursers.'

<sup>178</sup> Eisenhardt. 'Agency Theory.'

<sup>179</sup> Macdonald, *British Navy's Victualling Board*.

<sup>180</sup> Steinmo, 'Historical Institutionalism.'